

REMARKS

The Office Action mailed April 18, 2005, has been received and reviewed. Claims 1-18 are currently pending in the application, of which claims 1-8 are currently under examination. Claims 9-18 are withdrawn from consideration as being drawn to a nonelected invention and have been canceled without prejudice or disclaimer to the filing of one or more divisional applications including same. Applicant has amended claims 1 and 4-6 and respectfully requests reconsideration of the application as amended herein.

Claims 1 and 4-6 have been amended to clarify the scope of the claims. Support for the amendments is found in the as-filed specification at at least paragraph [0015] and [0023].

Information Disclosure Statement

The Information Disclosure Statement (PTO-1449) filed on October 20, 2003, was returned with references that were not considered and initialed because copies of the non-patent references were not available to the Examiner. For the sake of convenience, a second copy of this Information Disclosure Statement, a copy of the non-patent references cited therein, and a copy of the USPTO date-stamped postcard evidencing receipt of the Information Disclosure Statement are enclosed herewith. Applicant also notes that copies of the non-patent references should be available in the file of the parent application (Serial No. 10/154,755, filed May 24, 2002, now issued as United States Patent No. 6,709,980). It is respectfully requested that an initialed copy of the PTO-1449 evidencing consideration of the cited references be returned to the undersigned attorney.

35 U.S.C. § 102(b) Anticipation Rejections

Anticipation Rejection Based on U.S. Patent No. 6,235,557 to Manley

Claims 1-5, 7, and 8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,235,557 to Manley ("Manley"). Applicant respectfully traverses this rejection, as hereinafter set forth.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v.*

Union Oil Co. of California, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

Manley discloses a method of forming a reproducible and reliable fuse. Manley at column 3, lines 55-61. The fuse is formed while bond pads are defined in an uppermost or final metal interconnect layer of a semiconductor device. *Id.* at column 6, lines 20-22. The fuse is formed in a second-to-last metal interconnect layer of the semiconductor device. *Id.* at column 3, line 66 through column 4, line 3 and column 5, lines 44-47. An oxide layer is formed over the fuse and the final metal interconnect layer is deposited over the oxide layer. *Id.* at column 6, lines 2-4. Bond pads are formed in the final metal interconnect layer. *Id.* at column 6, lines 35-36. Another oxide layer is formed over the final metal interconnect layer and a nitride layer is formed over this oxide layer. *Id.* at column 6, lines 4-7. The nitride layer and underlying oxide layer are etched to expose the bond pads in the final metal interconnect layer. *Id.* at column 6, lines 48-49. The etching also removes the nitride layer overlying the fuse. *Id.* at column 6, lines 15-19. The resulting structure includes the fuse covered by the oxide layer, which functions as a passivation layer and provides ease and reproducibility to opening the fuse. *Id.* at column 6, lines 55-57 and column 7, lines 31-33. Wafers with this structure are subjected to probe testing and circuit repair to replace defective memory cells with functional memory cells by opening the fuses. *Id.* at column 6, lines 58-63 and column 7, lines 24-26.

Manley does not anticipate claim 1 because Manley does not expressly or inherently describe each and every element of claim 1. Specifically, Manley does not expressly or inherently describe the element of “at least one open fuse structure” (an intermediate structure.”

The Examiner states that reference numeral 420 in FIG. 2H corresponds to an open fuse structure. Office Action of April 18, 2005, p. 2. While reference numeral 420 corresponds to a fuse layer, nothing in Manley discloses that this fuse layer is an open fuse. Rather, Manley expressly discloses that the structure formed by its method, as shown in FIG. 2H, includes the fuse layer covered by the oxide layer. Since the oxide layer provides protection to the fuse layer before the fuse layer is opened, the presence of the oxide layer in FIG. 2H indicates that the fuse layer is in a complete or conductive state. As such, contrary to the Examiner’s assertion, the fuse

layer of Manley is not opened.

Since Manley does not expressly or inherently describe each and every element of claim 1, the anticipation rejection of claim 1 is improper and should be withdrawn.

Claims 2-5, 7, and 8 are allowable, *inter alia*, as depending from an allowable base claim.

Claim 2 is further allowable because Manley does not expressly or inherently describe that the metal feature is electrolessly plated. The section of Manley relied upon by the Examiner discloses a metal layer that is deposited and patterned to define bond pads. Nothing in Manley discloses that this metal layer is electrolessly plated.

Claim 5 is further allowable because Manley does not expressly or inherently describe that the metal feature comprises a nickel, palladium, gold, tin, silver, or copper feature. The section of Manley relied upon by the Examiner discloses that the fuse layer is formed from an aluminum alloy, a copper alloy, or other metal alloy.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on Manley in view of U.S. Patent No. 6,335,626 to Motulla

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Manley in view of U.S. Patent No. 6,335,626 to Motulla ("Motulla"). Applicant respectfully traverses this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for an obviousness rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The obviousness rejection of dependent claim 6 is improper because the cited references do not teach or suggest all of the claim limitations and do not provide a motivation to combine to

produce the claimed invention.

The teachings of Manley are as previously described.

Motulla teaches a method and device for determining a parameter to produce raised contact metallizations with uniform morphology on terminal areas of a test substrate. Motulla at Abstract and column 1, lines 6-9. A test substrate is placed in a metallization bath and the parameter is determined from variation in an electrical quantity as a consequence of electrical contact resulting from the buildup of contact metallizations on the terminal areas. *Id.* at Abstract and column 1, lines 34-40. The metallization bath is a nickel bath that forms nickel contact metallizations on aluminum terminal areas of the test substrate. *Id.* at column 4, lines 62-66.

Since claim 6 depends on claim 1, claim 6 includes all of the limitations of claim 1. As discussed in the anticipation rejection of claim 1, Manley does not expressly or inherently describe each and every element of claim 1 because Manley does not disclose the element of “at least one open fuse structure on an intermediate structure.” Manley also does not teach or suggest this limitation. Motulla does not cure this deficiency in Manley because Motulla also does not teach or suggest this limitation. Specifically, nothing in Motulla teaches a fuse. Therefore, Motulla necessarily does not teach or suggest an open fuse structure on an intermediate structure. As such, claim 6 is allowable, *inter alia*, as depending from an allowable base claim.

The cited references also do not provide a motivation to combine to produce the claimed invention. To provide a motivation or suggestion to combine, the prior art or the knowledge of a person of ordinary skill in the art must “suggest the desirability of the combination” or provide “an objective reason to combine the teachings of the references.” M.P.E.P. § 2143.01. “The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *Id.* (emphasis in original). The Examiner states that “it would have been obvious to one skilled in the art at the time the invention was made to modify the metal feature of Manley with nickel material, as taught by Motulla, so as to provide an alternative metal material to make the metal feature.” Office Action of April 18, 2005, p. 4. However, this statement by the Examiner is conclusory and is not based on objective evidence of record. As acknowledged by the Examiner, “Manley

does not explicitly teach that the metal feature has nickel.” *Id.* Furthermore, nothing in Motulla suggests the desirability of, or provides an objective reason for, having a nickel feature in a fuse, such as in the fuse of Manley.

Furthermore, even if the cited references were combined, the claimed invention would not be produced because the limitation of “at least one open fuse structure on an intermediate structure” would be lacking.

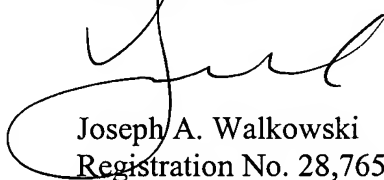
ENTRY OF AMENDMENTS

The amendments to claims 1 and 4-6 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add new matter to the application. Further, the amendments do not raise new issues or require a further search.

CONCLUSION

Claims 1-8 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain that might be resolved by a telephone conference, she is respectfully invited to contact Applicant's undersigned attorney.

Respectfully submitted,



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